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Combat Crew

strategic air command

NOVEMBER 1985

★★★★

Combat Crew

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ON OUR COVER

The beauty of an E-4B aircraft is highlighted by the lights of flight line maintenance vehicles. For more on the NEACP, see page four.

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Strategic M
Glamour

To many I'm sure the thought of the President's Strategic Modernization Program suggests the B-1B or perhaps the Navy's new Trident submarine. To others it may be the Air Launched Cruise Missile (ALCM), KC-10 or the new Peacekeeper ICBM. They are national assets, critically important to the deterrent strength of this great nation. They are new, exciting programs that many of you anxiously strive to become directly assigned to — and for good reason. A person derives a tremendous amount of personal pride from being part of a unit bringing on line a new weapon system and capability. That pride motivates, regenerates spirit and enables people to go well beyond the routine, the standard or what could be called normal.

When Griffiss AFB reached ALCM initial operational capability in December 1982 a grand celebration was held there. One could sense the tremendous feeling of accomplishment throughout the wing and for good reason! It takes a lot of hard work and countless hours of overtime to bring a new system on line — but in the end the results are there for all to see.

Another aspect or part of strategic modernization that gets less attention, is far less glamorous, and at times is emotionally draining is deactivation. We cannot, however, have strategic modernization without it. Through the years SAC has said goodbye to many old friends, the B-29, B-36, B-47, B-58, and the older model B-52's. The last flight to the bone yard at Davis-Monthan AFB is not glamorous and in fact, rather melancholy. The 96th Bombardment Wing at Dyess has been on an emotional high with the preparation, arrival, and flying of the new B-1B. But how about the crew chief who watched the departure of the last B-52 from Dyess? How did the preparations for its departure affect the personnel of the 96th?

At McConnell and Little Rock we see a different form of strategic modernization; complete deactivation of the 308th and 381st Strategic Missile Wings — retirement of the Titan II missiles, transfer of personnel, and casing of the colors. It takes steadfast dedication, motivation, and professionalism to do that job right. With the deactivation of Titan II we also see the last of a unique breed — the missile liquid propellant specialists. These people are the behind the scene specialists who have been the key to Titan readiness throughout the years. Working

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odernization: Glitter and and A Lot of Hard Work

in special rocket fuel handler's gear—rubberized suits complete with self-contained air supply and protective features—they have had a critical role in sustaining alert for over twenty years. During summer propellant operations a person in that suit will lose as much as eight pounds from exertion and sweat during each day's activity. In the winter they must guard against cold weather use cracking the suit and must carefully operate equipment that is often ice covered: in this operation, safety must always be uppermost. Then follows many long hours purging the missile and missile site fixed propellant piping with nitrogen to assure subsequent safe handling. The demands on the rocket fuel handlers are even greater during deactivation due to the frequency of propellant operations.

The propellant troops aren't alone, of course — no one is. It takes all the wing resources to deactivate Titan: corrosion control folks, crew members, SPs maintaining security for countless hours, weather, public affairs, bioenvironmental, communications, civil engineers. Not glamorous, occasionally exciting — always hard work.

The standard of performance for the Titan II deactivation was clearly set by the superb performance of the men and women of the 390 SMW at Davis-Monthan AFB — accident free and on-time. The casing of the colors at Tucson was a terribly disturbing event. To see a wing and weapon system which represented a significant percentage of the strategic retaliatory megatonnage of this nation cease to exist — that's significant.

The fine performance of the 390th has been more than sustained by the men and women in Wichita and Little Rock. Just prior to the start of deactivation at the 381st, the wing won the Blanchard Trophy at the SAC Missile Combat Competition. In 1984 they took third and in 1985 nearly halfway through the drawdown, the 381st took second. They were second last year only to their sister Titan II wing — the 308th! Not bad for two wings which are supposed to be on the down slide — swept the competition one - two! And it doesn't end there. Outstanding and excellent performance continues from both wings. Top-rated evaluations from the SAC/IG, and the 3901st Strategic Missile Evaluation Squadron — the first back to back outstanding DCM rating in years. Top awards to both wings in many arenas — the Lee R. Williams, Best Missile Wing Award two consecutive years; Best Missile Crew in the Air Force — these two wings have won it the last three years in a row! There's no question where their attention is — it's on their dual missions — sustaining the EWO/SIOP alert mission and safely proceeding with deactivation. They did it and they continue to do it with leadership and professionalism.

Maj Gen John A. Brashear,
Chief of Staff, HQ SAC

This nationally vital program of strategic modernization is demanding the most that SAC has to give. That challenge coupled with your professionalism will enhance and sustain the strategic deterrent strength of this nation. **Press on!** ★★

On November 1, 1985, Maj Gen Brashear retired from active duty after 35 years of distinguished service. We at Combat Crew salute him and wish him Godspeed in his retirement.—Ed

Photo by SGT Rita C Releford

E-4B: View From the Cockpit

Capt Stephen Jubinski, Jr.
1 ACCS, OFFUTT AFB

"Barto 65, wind 310 at 10 knots, cleared for takeoff." The transmission from Offutt tower prompts me to lift my gaze from the hammerhead concrete some 30 feet below. I instinctively press the PA button on the interphone panel and announce, "Good morning, ladies and gentlemen, tower has cleared us for takeoff, please recheck your seat belts, and ensure seat backs are in the full upright position. Flight time to Andrews AFB will be one hour and fifty minutes, have an enjoyable flight."

Maneuvering onto the active, I crosscheck my INS groundspeed readout to ensure 10 knots is not exceeded in the turn. (From our vantage point nearly three stories up, it is easy to misjudge taxi speed.) Calling for the final items of the checklist, the flight engineer responds, "IFF No. 1—On, Inboard Landing Lights—On, Body Gear Steering—Disarm . . . checklist complete."

I stand the throttles up, check the power stable, then call for the engineer to set takeoff thrust. A chill runs up my spine as I realize the utter lack of noise present in the cockpit. Less than 75 feet away four churning General Electric C F-6s are producing 210,000 pounds of thrust while the cockpit noise level remains equal to that of a typical business office.

With 'only' 160,000 pounds of fuel on board today, this 620,000 pound beauty will literally leap off the runway in less than 5800 feet. We quickly accelerate to our rotate speed of 150 knots, whereupon a smooth application of back pressure to the yoke raises the nose to the desired 18° climb attitude.

After ensuring a positive rate of climb, I call for "gear up." A climb speed of V_{co} (equivalent to the civilian world's V_2) plus 10 knots is held until 1000 feet AGL. Then I lower the nose to 8° and begin accelerating for flap retraction. Calling for flaps 5, I then request "climb thrust" from the flight engineer. Pressing the CLIMB button on the N1 Limit Computer located on the center pedestal, he sets the N1 rpm which has been displayed on the computer's digital readout window. Receiving inputs of altitude, Mach, outside air temperature, as well as indications of anti-icing and air conditioning pack configuration, this little marvel of modern science instantaneously displays corrected thrust settings for climb, cruise, and go-around phases of flight.

During climbout and departure the airplane handles like a dream. Three thousand pounds of hydraulic power applied to the control surfaces makes this a finger-tip operation. If anything, there is a tendency to overcontrol the aircraft, which can be a bit disconcerting for the up to 114 personnel we are capable of transporting.

Abiding by ATC restrictions, a climb of 250KIAS is maintained to 10,000 feet, whereupon we accelerate smoothly to our best rate of climb speed of 320KIAS/0.82M. With three independent autopilots available, each capable of flying an INS, VOR, TACAN, or ILS course or selected magnetic heading, as well as a desired vertical speed or indicated airspeed, I'm tempted to couple one to the aircraft (they can definitely fly more precisely than I can). However, the pure joy of flying the B-747 prevails and I hand fly the 15 minutes it takes to climb to our planned cruise altitude of FL 330.

Leading the level off with a power and pitch reduction I am conscious of my efforts to be as smooth as possible. Since our passenger manifest will often include personnel ranging in rank and importance from the Chairman of the Joint Chiefs of Staff, to White House aides, to the President himself, there is a constant effort by all our pilots to continually sharpen their flying skills.

With the aircraft trimmed for level flight, I engage an autopilot and couple the system to an INS while the engineer finetunes power to maintain our best range cruise Mach of 0.84. Having time to enjoy the view at FL 330, I begin to ponder whether I, a relative newcomer to the 1st Airborne Command Control Squadron (1ACCS), will ever lose the thrill of flying the E-4B (a.k.a. B-747-200).

"With 'only' 160,000 pounds of fuel on board today, this 620,000 pound beauty will literally leap off the runway in less than 5800 feet."

Glancing around the cockpit I am continually amazed at the engineering refinements incorporated into this superb example of the true "pilot's airplane." Triple autopilot, triple INS, triple flight director, dual VOR, dual TACAN, dual ADF, dual UHF, and dual VHF, it has everything an aviator could possibly desire in a flying machine. Instrumentation is simple with a logical layout. Hydraulic, electric, fuel, pressurization and other system indicators and controls are out of the purview of the pilots, located at the flight engineer's station. This eases the pilots' workload considerably, freeing them to simply fly the aircraft and look outside.

Meanwhile, a navigator station in the rear of the cockpit is outfitted with radar, INS, heading, altitude, and airspeed readouts, as well as the venerable sextant port. Again, the addition of a navigator further reduces pilot workload and serves to promote safety of flight operations.

As I check in with Indianapolis Center, the controller acknowledges and calls out traffic, a TWA 747 at 11 o'clock. Responding with "Barto 65 heavy, contact," we settle back down to our routine of setting up nav aids and clearing. I idly wonder if perhaps I had met one of the pilots in the TWA aircraft while attending my initial 747 training at the Trans World Airline Training Center located at JFK International Airport in New York. A rigorous ground school combined with superb simulator and flying training made for five of the toughest, yet most memorable weeks of my life. Normally open to only the airline's most senior pilots, this 29 year old certainly felt self-conscious sitting in a 747 class surrounded by 55 year old pilots. I silently chuckled as I thought back to the day that several TWA captains discovered that they had accumulated the equivalent of my 2,500 flying hours several years prior to my birth (I never heard the end of that!).

Basic 747 training was followed by E-4B transition conducted in-house at the 1ACCS. A new model of aircraft with larger engines and more complex systems meant more nights in the books learning different ops limitations, systems operations, etc. By far the biggest challenge,

however, was receiver air refueling. My background in EC-135s was indispensable here, but the E-4B has several refueling characteristics unique unto itself. First, the tendency to wander around the envelope, even when trimmed to fly hands off, keeps the pilot working at all times. Second, pitch is very sensitive, making it quite easy to create a PIO situation while refueling. Finally, and most importantly, is inertia. It takes time to get the aircraft moving in a desired direction. However, once moving, it is often difficult to stop. Of course, anytime an 800,000 pound object is hurled through space at 275KIAS, it will sometimes seem to act with a mind of its own. The governing factor here is to stay ahead of the aircraft!

Receiving clearance from center for a lower altitude, I place my hand on the throttles and slowly retard them to idle as I initiate our descent into the Washington area. Starting down a little early, I hope to maintain a fuel efficient 280KIAS descent profile while eliminating the need for drag devices (always striving for that smooth ride). Passing 18,000 feet, altimeters are reset as I call for the engineer to read the Descent checklist.

A quick check with Metro confirms weather at Andrews is VFR, yet today will provide an excellent opportunity to exercise CAT II/IIIa landing procedures. This incredible system extends our capability to "autoland" the aircraft under visibility conditions as restrictive as reported RVR of 700 feet.

After several approach frequency changes combined with various vectors, we find ourselves within 20 DME of our destination. Nearing the ILS approach course for runway 19R at Andrews we are handed off to the final controller.

"Barto 65 heavy, maintain 3000 feet, turn right to 160, cleared ILS runway 19R."

"Maintain 3, right to 160, cleared approach, Barto 65."

The ILS has been tuned and identified and inbound courses set. Flight director mode selector is placed to LAND position, DC buses are split and all three autopilots engaged. Radio altimeters are set to 100 feet for the captain and 200 feet for the first officer (when below 2000 feet AGL).

As the CDI moves across the HSI, the aircraft turns to track the localizer inbound. Flaps are lowered to position 20 and the gear extended. I call for the Before Landing checklist. At glide slope intercept I request flaps 30 and engage autothrottles to maintain our final approach speed. The engineer reports landing checklist complete as tower transmits:

"Barto 65, check wheels down, cleared to land."

"Barto 65, gear down and checked, cleared to land."

At 1500 feet AGL, the autopilots conduct a self-test which ensures the autoland system is operating normally. I watch, my hands gently resting on the control wheel and throttles, as the aircraft flys a perfect, unassisted ILS approach.

The first officer begins his callouts, "1000 feet . . . 500 feet . . . Approaching decision height . . . Land." At 53 feet the aircraft captures the flare mode and the yoke smoothly moves aft, at 30 feet the throttles slowly retard to idle, then comes touch down, on centerline.

Speedbrakes automatically deploy, while I manually select reverse thrust. The aircraft begins slowing as the autobrake system kicks in. Autopilots are disengaged and I begin to manually brake the aircraft. Below 35 knots I engage body gear steering and slow further in anticipation of our turn off at the exit.

Incredible equipment . . . for an incredible task. We exist to provide a survivable platform for the JCS/National Emergency Airborne Command Post (NEACP). NEACP in turn provides direct support to the President, Secretary of Defense and JCS in the event of a national emergency or general war scenario.

Taxiing into parking, I think back to my initial training, to previous flights in this super machine as well as the one just completed. I reflect upon the tremendous responsibility with which all 1ACCS flight crew members are tasked. Will the thrill ever wear off? The answer now seems very clear. Not a chance.

(For information concerning application procedures and requirements for this Special Duty Assignment, refer to AFR 36-20, para 8-19).

A 1975 graduate of the University of Hawaii, Captain Jubinski earned a masters degree from the University of Chicago the following year. Presently assigned to the 1ACCS as an aircraft commander, he has served as an instructor pilot with the 557 FTS (USAFA) and the 4ACCS.

Pease Wins "Load Comp"

The Barrentine Trophy

COMBAT WEAPONS LOADING COMPETITION
BEST WING COMPETITION TEAM
CHIEF MASTER SERGEANT WILBUR R. BARRENTINE

The Winners

Barrentine Trophy Pease	509 BMW
Best Munitions Load Crew Pease	509 BMW
Best Security Police Unit Dyess	96 BMW
Best Bomber Crew Chief Minot	5 BMW
Best Combined Load Crew Pease	509 BMW
Best B-52 Load Andersen	43 SW
Best FB-111 Load Pease	509 BMW
Best SRAM Load Plattsburgh	380 BMW
Best ALCM Load Grand Forks	319 BMW
Best MMS Testing Griffiss	416 BMW
Best MMS Equipment Pease	509 BMW
Best Crew Chief Testing Minot	5 BMW
Best Crew Chief Preload Exercise Minot	5 BMW
Best Crew Chief Postload Exercise Blytheville	97 BMW
Best SP Practical Exercise Dyess	96 BMW
Best SP Testing Dyess	96 BMW
Best SP Tactical Weapons Firing Dyess	96 BMW
Best SP Confidence Course Performance Dyess	96 BMW
Best SP Supervisor Dyess	96 BMW
Spirit Bell Award Fairchild	92 BMW

Maj Bob Neidrick,
Editor

The 509th Bombardment Wing has won the Barrentine Trophy, the coveted first place award of the SAC Combat Weapons Loading Competition. The men and women of Pease Air Force Base, New Hampshire can be very proud of their team which made a mighty surge after being in fourth place midway through the competition. The 509 BMW competitors tallied 2,782 of a possible 3,000 points to win this year's spirited meet held Sept 19-26 at Ellsworth AFB, SD.

This year's runnerup was the 2 BMW from Barksdale AFB. The competition for second through fourth places was extremely tight. Only four points separated these three positions. Barksdale chalked up 2747 points, while the 416 BMW from Griffiss AFB was only one point back with 2746. Close behind with 2743 points was the 410 BMW from K. I. Sawyer AFB.

The Barrentine Trophy memorializes the late CMSgt Wilbur R. Barrentine who was closely associated with SAC munitions programs from the mid-1950's until his death while serving on active duty in 1970. CMSgt Barrentine is honored for his contributions to SAC'S commandwide munitions safety record during his career. His experience and managerial ability helped munitions loaders throughout SAC convert from a stateside nuclear alert mission to an active conventional weapons role during the conflict in Southeast Asia.

The annual Combat Weapons Loading Competition serves several valuable purposes for Strategic Air Command, according to Gen Larry D. Welch, commander in chief. "First and foremost, the competition is a source

Gen Welch presents the Barrentine Trophy to Col Robert J. McKraken, commander of the 509 BMW.

of recognition for the munitions loaders, aircraft crew chiefs and security police who are the backbone of the SAC mission. The competition also serves as a peacetime demonstration of our proficiency and capability to support the Air Force's strategic deterrent mission. Finally, the competition serves as a forum to exchange new ideas and innovative ways to get the job done."

This year's competition was the 16th hosted by the Strategic Air Command. Sixteen of the 17 participating teams consisted of three elements: a munitions load crew; an aircraft crew chief; and a security police team. Because the 96 BMW at Dyess AFB is converting to the B-1B, only a security police team represented Dyess this year.

Scoring for the munitions load teams was in three areas: a written exam, an equipment inspection and two munitions loads. The aircraft crew chiefs were also scored on the basis of a written exam and two exercises — one pre-load and one post-load. Se-

Members of Pease's 509 BMW arrive at Ellsworth.

The load team from Ellsworth AFB exerts themselves.

The winning team from Pease.

Dyess SPs fire at the aggressors during the practical exercise.

Sgt Douglas Duncan, crew chief from Barksdale AFB.

SSgt Clay Whitney, 93 BMW, guides the bomb clip in.

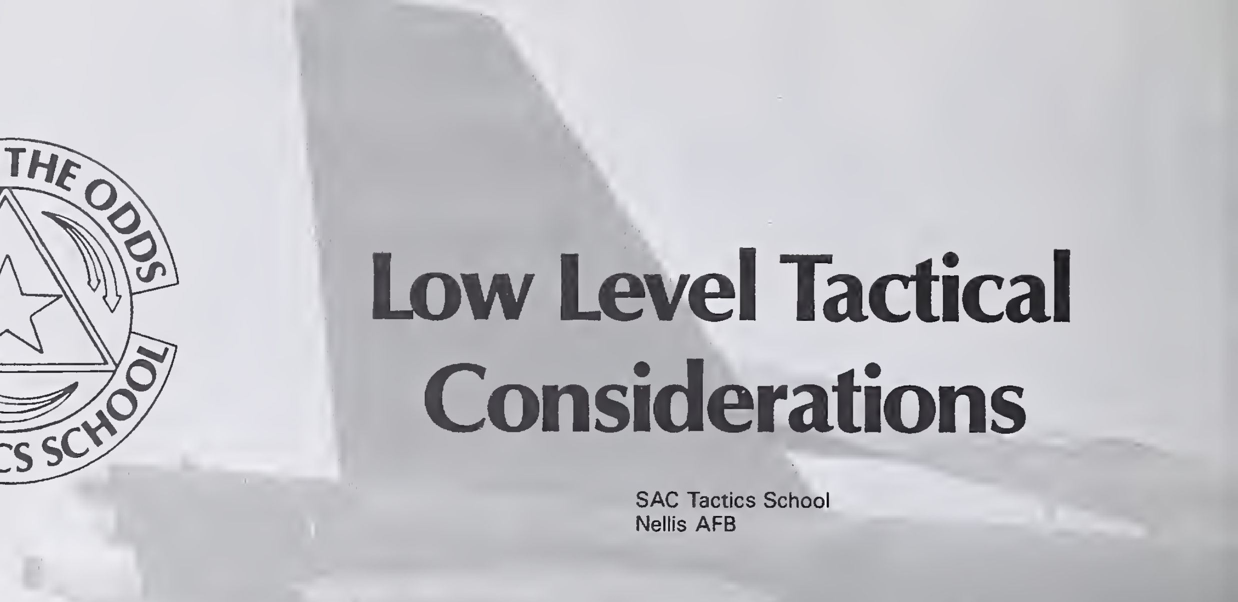
TSgt Jeff Mazowski, crew chief from Pease, in competition action.

The concentration shows on the face of Plattsburgh's SrA Donald C. Mulner.

curity police teams competed in four areas: a written exam, a confidence course designed to evaluate physical capabilities (this year replaced by a 5KM "Warrior run" due to poor weather), a tactical weapons firing course, and a practical exercise simulating a situation involving the protection of strategic resources.

The scoring for the competition was conducted by SAC Maintenance Standardization and Evaluation (MSET) members for load crews and aircraft crew chiefs, and representatives from the Headquarters SAC Office of the Chief of Security Police for the SP's. According to CMSgt Dennis Keffer, MSET chief, the judges were "looking for excellence and attention to detail" and were tasked to "ensure fairness and equality" for all competitors.

Cont'd on page 15



Low Level Tactical Considerations

SAC Tactics School
Nellis AFB

The basis of the following article was written by Lt Col Bob Ames (then assigned to the Tactics Division, HQ SAC/DOO) and published in the 1 Dec 83 Tactics Crosstalk. The article has been updated by the SAC Tactics School and complements the school course dealing with route study, threat recognition and low level considerations. While concepts presented here may be familiar to you, it is often beneficial to "step back" and reconsider tactical fundamentals important to the success of your mission. Col Ames was instrumental in staffing the tactics school concept and his initial thoughts on low level consideration remain applicable.—SAC Tactics School

This discussion will deal with contingency operations and is by no means intended to be all inclusive; rather it is meant to pass along some general lessons learned while conducting low level operations.

There are three particular areas which, given the proper emphasis during mission planning, can significantly deter potential confrontations during your sortie. These areas are: route study; threat recognition and environmental considerations.

Route study is the keystone to mission success. As you familiarize yourself with the ingress/egress portions of your sortie, consider the following: crew comfort level, camouflage, terrain masking and threat avoidance. Planners weigh these elements when designing a route; however, they are not oracles and cannot foresee all that you will encounter during a mission.

Perhaps the most critical factor for any crew conducting low level operations is "comfort level." Simply defined, this term refers to that altitude above the ground where an individual/crew can effectively perform the tasked mission. A pilot may think that his comfort level is the crew's comfort level. This is not necessarily the case. Crews that have flown together for some time and are cognizant of each other's abilities are more likely to possess compatible comfort levels.

It is not necessary to be very low all the time. Route study, threat awareness and crew ability will determine where you must take it down and how low. The intense concentration required to fly an aircraft at extremely low altitude is physically and mentally fatiguing. Also, when concentrating and working hard in the extremely low altitude regime, crews may become task saturated to the point that they tend to "not hear" some valuable interphone transmissions. The one you miss, or the one that must be repeated, could become your last threat warning. Determine who has the highest (altitude) comfort level on your crew. Then gradually, in the course of your training, strive to develop a tactically sound crew comfort level.

Now, study the routing. Is it making the best of your assets? B-52s and FB-111s are camouflaged aircraft. However, in some cases the paint job can actually work against you. Proper route study can make the difference. If a two mile deviation to the left allows you to overfly a forested area of 25-30 miles, and thereby use camouflage, the odds of your arrival on target have just increased. This technique helps prevent visual detection from patrolling fighters and drastically reduces the effectiveness of ground based threats located on the fringes of these forested areas. Conversely, the crew that blindly follows the planned course line, overflying dry lakes or snow covered areas, is much more likely to be detected.

Will your route circumnavigate most threat areas or has one been overlooked? Perhaps the planner is counting on your ECM gear to do its job, or that the given ingress altitude is below the minimum engagement altitude of a particular threat. Ideally, you would like to arrive on target unannounced. The key is blending in with the available terrain features. As you review the mission, consider how your proposed deviation will affect timing, possible detection and other strike aircraft. Look at your low level flight plan. How long wiil you be low level? How many threat areas will you transition? If you must evade and maneuver in each one, considerable time will be lost. Do you have enough capability to make up this time to make good your TOT? A total crew involvement, using all the combined experience of the respective crew members, can make a difference.

Let's look at another area where a total crew effort is essential: threat recognition. Assume you receive a radar warning receiver (RWR) indication and then visually acquire an aircraft in the distance. Is it an FB-111 at six miles or a MIG-23 at four miles? There are only a few seconds to react—do you know the threat? You can bet that your adversary knows you. He knows your speeds and your defenses. Do you know how he can threaten you? Example: most of the air threats which we currently face do not possess a true look down/shoot down capability. Therefore, if ingressing below GCI coverage, using good terrain masking and optimum camouflage techniques, you have seriously compounded the problem for the interceptor pilot. He must acquire you visually, a difficult task but not impossible. Then, once acquired, he will attack. All adversary aircraft have radar missiles, all carry heat-seeking missiles, and the majority are gun equipped. Which will he use? Can he attack head on? Pilots must visually scan for the threat (airborne and ground based) while flying TA/TFR! You cannot spend too much time outside the cockpit. The speed with which the fighter can appear and disappear drives this necessity.

Referring back to the FB-111/MIG-23 problem, say you determine the aircraft to be a MIG-23. Is he radar capable? Will he attack with the gun, or will he maneuver for a heat shot? These are instantaneous recognition factors by which a pilot who has done his homework may alert his crew and help fend off the attack. Once you're detected, expect additional bogies to arrive in the area. What can you do to shake this attacker and prevent subsequent detection? Some tactical defense considerations can greatly assist in making this a more difficult task for the attacking fighter pilot. You may even reduce him to a smoking pile of rubble.

Assume the attacker is gun and heat equipped and has begun a turn to your six o'clock. By flying your aircraft lower, you will seriously impede the efforts of even the best fighter pilot. In most cases he has to get below you to have a "blue sky" background for a good heat missile shot. What you have done is present him multiple problems: he's now flying in an extremely uncomfortable regime, one he may not have trained in, and one he may not want to operate in. He must be wary of the jet wash from your aircraft which can cause him considerable control problems at extremely low altitude. He must avoid the guns (if so equipped) sticking out of your tail and he must also be aware of the terrain which could reach up and grab him. This entire scenario can be envisioned and preflown in a good mission planning or threat awareness session.

Assume the first attacker has been countered and you are pressing on to the target. There are some environmental considerations which will impact your mission and require difficult tactical decisions. For instance, in many areas of the world one of your toughest antagonists will be the sun and your resultant shadow. Hawking fighters like to attack from out of the sun and use it extensively to help acquire targets moving beneath them. A suggested method of offsetting this imposition is varying altitude.

When flying eastbound, with a late afternoon sun, your shadow will be out in front of you. By varying your altitude you can alter the relative position of your shadow—flying higher casts the shadow further from your position and vice versa. Be conscious of this condition. Many a fighter pilot has rolled in or initiated an attack on a shadow. A noon sun poses the biggest problem. Flying higher disperses the shadow to some degree, but it still indicates your position. If faced with this condition attempt to avoid open areas and look for darker areas which will mask your shadow. Your decision is whether to climb or stay low and avoid radar detection. Threat awareness enables a crew to quickly assess situations such as this.

Clouds may also aid your low level operations. A scattered or broken deck will cause shadows on the ground which will assist in masking your shadow and help your camouflage scheme screen you from overhead fighters. These fighters may be visually acquired from some distance out, and by using these defensive techniques, you could pass beneath them without being detected. CAUTION: Do not fly directly beneath a cloud deck. Anti-aircraft gunners will know the exact base of this layer and a B-52 silhouetted against the deck provides a well defined target.

Night operations are well suited for bomber employment, and our missions, which are typically long, are planned to maximize the "cloak of darkness." We will examine some night considerations but bear in mind that the length of your mission may expose you to the daylight conditions previously discussed.

As stated, the ultimate goal is to arrive over the target without being detected. A moonless night, hopefully one with adverse weather, provides the optimum condition. This combination denies much of the fighter threat, and seriously degrades ground-based optical tracking systems.

A full moon, on a clear night, makes undetected penetration much more difficult and requires well thought out preparation. The full moon also casts shadows. During night conditions, when everything is reduced to black and white, shadow acquisition will significantly assist patrolling fighters in tallying your position.

Track crawling, to mask your shadow, is the best technique you can employ. Seek darkened areas on the ground and overfly them. Do not cross lakes, use the shorelines. Fly defensively. The pilots, working in concert with the nav team, can visually pick these features and notify the crew of course deviations. Flying 10-15 knots faster will allow you to track crawl, stay on time and using the above techniques, avoid detection.

Other terrain features also warrant consideration. Fighters hawk mountain gaps or passes expecting a penetrator to fly through these areas. Remember, you are attacking his homeland and he knows these logical routes. By crossing a ridgeline or mountain group some distance from these natural passages, you decrease your probability of detection. Also, certain countries hang cables or wires in these passes which are not depicted on your strip charts. These are just a few examples of items to consider when you start analyzing your route and begin formulating your defensive plan.

As prefaced, this article is by no means all inclusive, merely an attempt to surface some tactical considerations. Threats will continually evolve. Answers are not always found in books. The imagination and preparation of SAC crew members will no doubt make the difference. You are invited to respond with procedures or techniques used by your unit which may be of benefit to fellow crew members. Use your imagination, think tactics and check your 12 and 6.

CROSS CHECK IFC

The Maze Revisited

SIFC, Castle AFB

Last month we discussed the subtle differences between AFM 51-37 and ICAO circling procedures. This month, let's review some of the considerations and techniques that will keep you safe no matter where you circle or which procedures you use. As a vehicle for discussion purposes, take a look at the VOR/DME RWY 19 approach at Riyadh, Saudi Arabia (figure 1), and imagine circling to land in your category D aircraft.

The circling minima section shows that you need at least a 900 foot ceiling and a prevailing visibility of 4400 meters in order to circle. When the prevailing visibility is reported in meters, most crews will need to convert this value to statute miles in order to know how far from the runway they can fly and still keep the runway environment in sight (ICAO). This conversion can be done easily by referring to either page D-2 of the Flight Information Handbook or the METAR conversion chart in the front section of any Approach Procedures Booklet (figure 2). Now that you know what your lateral visibility requirements are, we need to be aware of a very deceptive visual illusion associated with the circling maneuver.

This illusion involves lateral displacement from the runway. National Transportation Safety Board records show that many aircraft have crashed during the circling maneuver because the pilot(s) were tricked into overbanking the aircraft, stalling and then failing to recover before ground impact. They overbanked because they were not offset far enough from the runway to make a final turn using a normal bank angle. Do you understand WHY there is a tendency to fly too close to the runway while at the circling MDA? Your normal perspective of the runway is seen 1000 ft AGL or more while on downwind; not at 550-600 ft AGL, which is a typical HAA on a circling approach (Riyadh's HAA

FIGURE 1

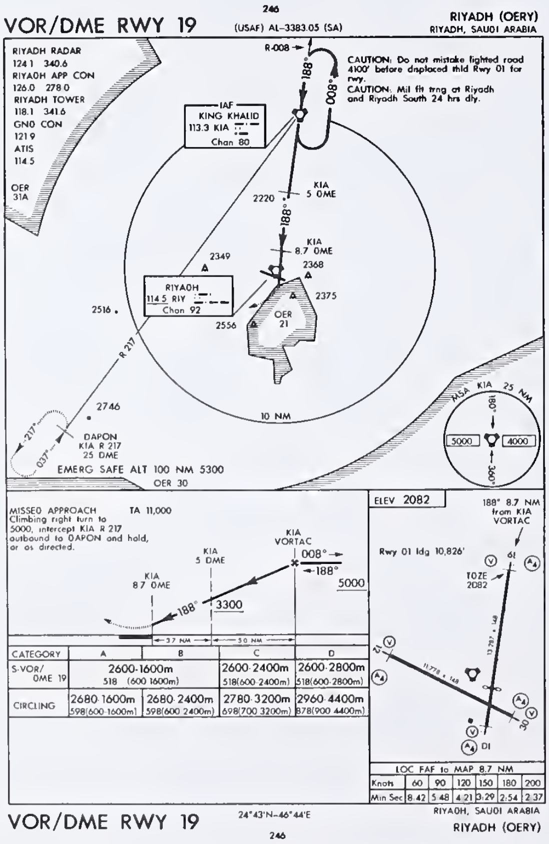
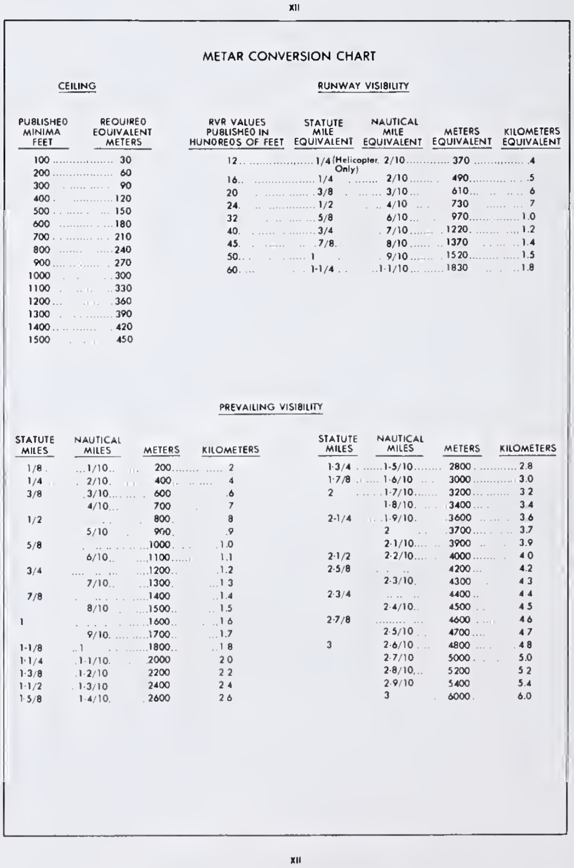

VOR/DME RWY 19
246
(USAF) AL-3383.05 (SA)
RIYADH (OERY)
RIYADH, SAUDI ARABIA
RIYADH RADAR 124.1 340.6
RIYADH APP CON 126.0 278.0
RIYADH TOWER 118.1 341.6
GND CON 121.9
ATIS 114.5
OER 31A
R-008
188°
008°
CAUTION: Do not mistake lighted road 4100' before displaced thld Rwy 01 for rwy.
CAUTION: Mil flt trng at Riyadh and Riyadh South 24 hrs dly.
IAF
KING KHALID 113.3 KIA Chan 80
KIA 5 DME
2220
KIA 8.7 DME
2368
2349
2375
RIYADH 114.5 RIY Chan 92
2516
2556
OER 21
R 217
2746
DAPON KIA R 217 25 DME
217°
037°
10 NM
EMERG SAFE ALT 100 NM 5300
OER 30
MSA KIA 25 NM
180°
360°
5000
4000
MISSED APPROACH Climbing right turn to 5000, intercept KIA R 217 outbound to DAPON and hold, or as directed.
TA 11,000
KIA VORTAC
008°
188°
5000
KIA 5 DME
3300
KIA 8.7 DME
188°
3.7 NM
5.0 NM
CATEGORY
A
B
C
D
S-VOR/DME 19
2600-1600m 518 (600 1600m)
2600-2400m 518(600-2400m)
2600-2800m 518(600-2800m)
CIRCLING
2680-1600m 598(600-1600m)
2680-2400m 598(600-2400m)
2780-3200m 698(700-3200m)
2960-4400m 878(900-4400m)
ELEV 2082
188° 8.7 NM from KIA VORTAC
Rwy 01 ldg 10,826'
TDZE 2082
01
12
30
19
LOC FAF to MAP 8.7 NM
Knots 60 90 120 150 180 200
Min Sec 8:42 5:48 4:21 3:29 2:54 2:37
VOR/DME RWY 19
24°43'N-46°44'E
246
RIYADH, SAUDI ARABIA
RIYADH (OERY)

FIGURE 2



xii

METAR CONVERSION CHART

CEILING

PUBLISHED MINIMA FEET	REQUIRED EQUIVALENT METERS
100	30
200	60
300	90
400	120
500	150
600	180
700	210
800	240
900	270
1000	300
1100	330
1200	360
1300	390
1400	420
1500	450

RUNWAY VISIBILITY

RVR VALUES PUBLISHED IN HUNDREDS OF FEET	STATUTE MILE EQUIVALENT	NAUTICAL MILE EQUIVALENT	METERS EQUIVALENT	KILOMETERS EQUIVALENT
12	1/4 (Helicopter Only)	2/10	370	.4
16	1/4	2/10	490	.5
20	3/8	3/10	610	.6
24	1/2	4/10	730	.7
32	5/8	6/10	970	1.0
40	3/4	7/10	1220	1.2
45	7/8	8/10	1370	1.4
50	1	9/10	1520	1.5
60	1-1/4	1-1/10	1830	1.8

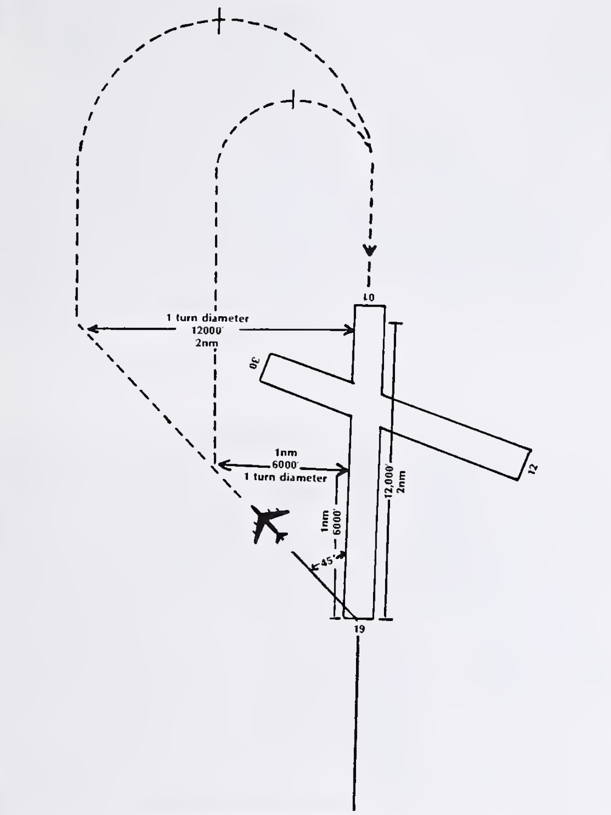
PREVAILING VISIBILITY

STATUTE MILES	NAUTICAL MILES	METERS	KILOMETERS
1/8	1/10	200	.2
1/4	2/10	400	.4
3/8	3/10	600	.6
	4/10	700	.7
1/2		800	.8
	5/10	900	.9
5/8		1000	1.0
	6/10	1100	1.1
3/4		1200	1.2
	7/10	1300	1.3
7/8		1400	1.4
	8/10	1500	1.5
1		1600	1.6
	9/10	1700	1.7
1-1/8	1	1800	1.8
1-1/4	1-1/10	2000	2.0
1-3/8	1-2/10	2200	2.2
1-1/2	1-3/10	2400	2.4
1-5/8	1-4/10	2600	2.6

STATUTE MILES	NAUTICAL MILES	METERS	KILOMETERS
1-3/4	1-5/10	2800	2.8
1-7/8	1-6/10	3000	3.0
2	1-7/10	3200	3.2
	1-8/10	3400	3.4
2-1/4	1-9/10	3600	3.6
	2	3700	3.7
	2-1/10	3900	3.9
2-1/2	2-2/10	4000	4.0
2-5/8		4200	4.2
	2-3/10	4300	4.3
2-3/4		4400	4.4
	2-4/10	4500	4.5
2-7/8		4600	4.6
	2-5/10	4700	4.7
3	2-6/10	4800	4.8
	2-7/10	5000	5.0
	2-8/10	5200	5.2
	2-9/10	5400	5.4
	3	6000	6.0

xii

FIGURE 3



is 878 ft). Improper lateral displacement occurs because the pilot, in order to make the picture look the same, flies too close to the runway. If weather permits, the best method for solving this problem is to fly the entire circling maneuver at a normal traffic pattern altitude. This will give you the same visual cues that you're used to seeing and allow you to "normalize" the approach.

If circumstances do not permit maneuvering at traffic pattern altitude, then it's critical that you use a technique for displacing the aircraft to a position that equates to one turn diameter. This distance from the landing runway may be obtained from a known ground reference, timing, or if available, DME. Let's look at four different aircraft positioning techniques. Each technique uses 30 degrees of bank to allow a 30 degree bank turn during the final turn (no wind). The first three techniques are useful when circling to the opposite runway. For our examples, we'll assume an airspeed of 180 KTAS which results in a turn radius of about one mile (turn radius = NM/MIN -2; i.e., TR =3NM/MIN -2 = 1 NM). With a turn radius of 1 NM, we simply double this figure to obtain a turn diameter of 2 NM.

(1) 45 Degree Method (figure 3): When reaching the approach end of RWY 19, turn 45 degrees off runway heading. Hold the heading (corrected for drift) until nearly abeam the threshold of RWY 01, then turn parallel to the runway. This gives an offset of 2 NM for 12,000 foot long runways (most SAC runways). If you need less of an offset, then turn to parallel the runway

FIGURE 4

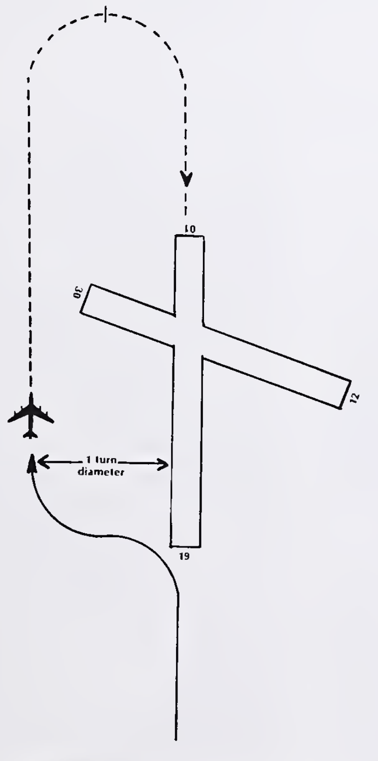
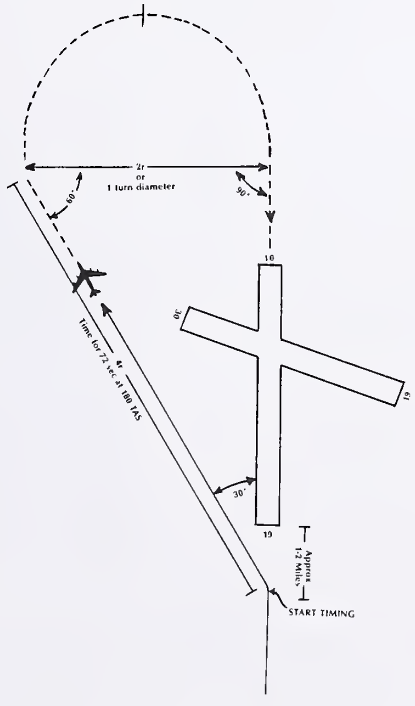


FIGURE 5



abeam the proper offset point (i.e., for a 1 NM offset, turn parallel abeam a point 1 NM down the runway).

(2) Two 90 Degree Turn Method (figure 4): Turn 90 degrees to the left followed by 90 degrees to the right. This technique is excellent for displacement since each turn displaces the aircraft one turn radius and two turns result in a displacement of one turn diameter. The first turn can be made when the runway is sighted or when over the threshold. A possible problem with this technique is that you may have difficulty keeping the runway environment in sight when you are 90 degrees from runway heading, so we recommend using this technique only in good prevailing weather conditions.

(3) 30 Degree Timing Method (figure 5): Turn 30 degrees off runway heading, time for four times the aircraft's turn radius in seconds and then turn to parallel. Fully understanding this technique involves some basic geometry. For any 30-60-90 triangle, the hypotenuse (4r) is twice the length of the length of the short leg (2r). If we let the distance of the short leg represent one turn diameter, then the hypotenuse is twice that distance. Since 10 percent of the TAS equals one turn radius in seconds, time the distance which will displace your aircraft one turn diameter. Rather than bog you down in any more higher mathematics, let's look at an example of what we mean. At 180 KTAS, 10 percent of TAS = 18 sec; and 4 X 18 sec = 72 sec. Fly on the 30 degree offset heading for 72 sec to provide 1 turn diameter offset. Remember to apply drift corrections to the 30 degree leg and downwind.

(4) One 90 Degree Turn to Downwind Method (figure 6): Some circling approaches bring you in perpendicular to the runway. After crossing the runway, fly outbound a distance equal to your aircraft's turn radius. For example, at 180 KTAS time for 18 sec (10% of TAS), then start the turn to downwind. The timing will give you one turn radius and the 90 degree turn will provide the other.

These techniques are good for lateral displacement, but you may end up close to the visibility limit for your aircraft category. When the prevailing visibility is reported as 3 miles, does this mean that you will be able to see 3 miles during the entire circling maneuver? Maybe not. The definition of prevailing visibility is, "the greatest horizontal visibility equalled or exceeded throughout at least half the horizon circle which need not be continuous." Confusing? YES it is, but figure 7 should help explain it. Figure 7 shows the visibilities in miles recorded by an observer in each quadrant of the horizon. The prevailing visibility would be reported as 3 miles or 4800m with an added statement that the visibility is lower to the northeast and southwest. As long as you remain within the northwest or southeast quadrant, you will have the 3 mile visibility, but maneuver outside these quadrants and you might lose sight of the airport environment (runway environment overseas). Use the reported prevailing visibility as a guide to know the maximum distance from the runway to maneuver, but be prepared to fly a tighter maneuver when lower visibility is encountered.

FIGURE 6

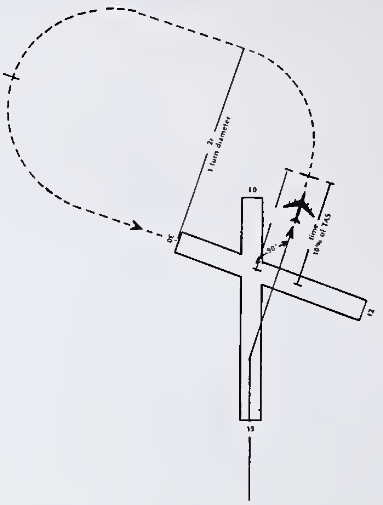
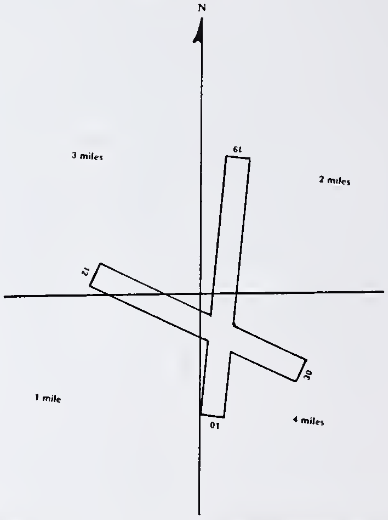


FIGURE 7



The following "Circling Guidelines" summarize this article and should keep you safe while circling:

(1) Use an offset technique that will provide you with enough room to complete a safe turn to line up with the landing runway. Don't depend only upon your normal visual cues, you might be dangerously fooled.

(2) When circling in the U. S., keep the airport environment (runway environment overseas) in sight. Use the reported prevailing visibility as a guide to determine how far to offset but never exceed the limits of the circling obstacle protected area, 2.3 NM from the runway thresholds for a CAT D aircraft and 4.5 NM for a CAT E.

Cont'd from page 9

Ellsworth's SSgt Scott Lewis pushes the equipment cart into position.

Andersen team members SrA Scott A. Ho and Sgt Walker R. McCurdy demonstrate all-important teamwork.

Crew Chief SrA Louis Fiore Jr., Plattsburgh AFB.

Barksdale's Sgt Raymond Cargar keeps a sharp lookout during the SP practical exercise.

The strain shows but the competition goes on.

In individual categories, the Pease munitions team helped take home the Barrentine by taking top honors with 1352 points out of a possible 1400.

SSgt Paul Fournier of the 5 Organizational Maintenance Squadron, Minot AFB, amassed 371 points out of a maximum 400 to win the Best Crew Chief award. SSgt Fournier took an early lead in the first round and held on to win.

The only representatives from Dyess AFB, the security police team, made their presence felt. The cops from Dyess lost only 14 points of a possible 1200 to finish way ahead of the second place finishers by 41 points. Their supervisor, SSgt Jesse Garza, was the obvious choice for Best Security Police Supervisor honors.

Another special award, the Spirit Bell, awarded to the team that demonstrates the finest spirit throughout the competition, was presented to the 92 BMW from Fairchild AFB by CMSgt Jan C. Boyd, SAC's Senior Enlisted Advisor.

Although non-winning teams may have returned home without trophies, they should in no way feel defeated. As Maj Gen John A. Brashear, then Chief of Staff of Strategic Air Command, stated as he addressed the competitors: "You will depart with a great sense of pride in knowing that you have competed with the best of the best, and that, in every respect, you're winners in your own right."

Congratulations to all who competed!

ARE YOU READY?

Capt Paul W. Bekebrede
97 BMW/SEF, Blytheville AFB

It's another o'dark thirty showtime at the squadron for a 5.5 hour mission to include air refueling, an N-53 navigation leg, and one hour of transition in the local pattern. As you fumble with the lock and then search for the light switch, you think to yourself, "1CEVG left three weeks ago, S-101 is on alert and S-102 flew this morning. At least I don't have to worry about a no-notice." As you bang your knuckles against the coat rack that someone was thoughtful enough to relocate, your ever-friendly boom operator comes through the door behind you.

"Morning, Boom."

"I guess so, Nav."

"What's the matter?"

"Oh, not much, the Chief Boom is screaming about the one bad lesson plan that 1CEVG found during their inspection. He wants it rewritten ASAP and I've been working all day on it."

A quick call to the command post reveals no mission changes, but job control says that the number four engine failed water injection on the morning mission. Maintenance is working the problem and wants to do another water run. The ETIC is parts plus three hours.

A slam of the door and a helmet bag sliding across the floor announce the arrival of your copilot and behind him the AC.

"Well, another day, another slap in the face."

"Great attitude, Co. Keep it up and you'll be the oldest copilot in SAC."

"Ace, I'm just molding myself in your austere image. By the way, I finished the bond drive paper work and turned it in to the accounting and finance project officer today. Oops, I mean yesterday."

With the FCIF signed, helmet and pubs bags collected, your crew makes the standard stops at the inflight kitchen and life support enroute to base ops. The weather briefing shows thunderstorms along the entire northern edge of the refueling track. However, they should not be a factor for the scheduled ARCT and for up to two hours afterward. A quick review of the mission that was planned three days ago reveals no changes. The copilot busily recomputes the takeoff data based on the new temperature and pressure altitude.

"Well, another day, another slap in the face." "Great attitude, Co. Keep it up and you'll be the oldest copilot in SAC."

"Co, what do the new numbers look like?"

"Well, Ace, if this calculator is correct, they are close to what we planned the other day with some minor changes."

"Okay, we'll give it a quick check before takeoff since it will probably change again."

"Say Ace, did you get your car fixed?"

"Naw, I had to do a 'dirty purple' for an ACSC seminar tomorrow. By the time I got around to working on the car and finding out that it was a bad spark plug wire all the parts stores were closed. I drove the wife's car in. I'll pick up the wire tomorrow, or should I say later today."

A call to job control reveals that the maintenance is almost complete. They want to do a quick water run, and if it checks good, they will upload the needed water. By mutual decision, your crew agrees that the air conditioning and the movie on the TV in the crew lounge are better than the mosquitos and heat in the crew bus.

"Nav, are you going to fly a grid or magnetic nav leg?"

"Boom, I haven't even decided whether to fly basic or integrated. With your shooting it doesn't make any difference. All the LOPs are out in the weeds anyway."

One hour, four candy bars, and eight cups of coffee later, job control calls to say the aircraft is ready.

"Nav, do you have any change left?"

"No, I'm out, Boom."

"I wish you had some more change since I didn't think to buy a flight lunch."

Arriving at the aircraft you and the crew rush through the forms and upload your baggage. During the walkaround the crew chief affirms that the number four engine had a good water run. However, the number three engine was written up for erratic oil pressure on the last flight. Unfortunately, post-flight maintenance could not duplicate the problem.

Halfway through the preflight you receive a call from command post that their receiver is orbiting at the ARIP.

"Control, how much longer can he delay?"

"About 30 minutes, sir. He says he is running out of transition duty day and wants to get back to home station to accomplish currency training for two staff pilots."

"Standby, Control. Nav, what is the latest we can take off, have zero orbit and make the ARCT?"

"Twenty minutes from now, pilot."

"Okay, Control, tell the receiver we'll be there ASAP. Okay guys let's shift into high gear!"

An uneventful engine start, taxi and quick review of the takeoff data occurs. Having received takeoff clearance, the aircraft lines up on centerline and the aircraft slowly accelerates.

At this point my narrative stops. Use your imagination to fill in the rest.

Put yourself in the appropriate crew position. Were you ready to fly? Before you answer, take the time to review AFR 60-1, AFR 60-16, and SACR 50-12 for starters. Then draw your own conclusions. I believe it could very possibly end with the statement **"Results of the Safety Investigation Board revealed . . ."**

THE CUTTING EDGE

Self-Study: Ma

You may remember that last month's "Cutting Edge" also addressed self-study. While that article discussed the ***why*** *of self-study, this month we look at some techniques of* ***how*** *to accomplish it. Editor*

Capt James M. Jenkins
Capt Michael G. Vaughn
3901 SMES

Today's Air Force boasts an enviable academic record: 99% of its members have, as a minimum, a high school diploma. Additionally, over 45% have either some college credit or completed degrees. In light of such statistics, is an article about self-study preaching to the choir?

In the world of academia, whether pursuing a degree or completing Minuteman Initial Qualification Training (IQT), self-study is an integral part of the process. Once the goal is attained, however, our natural instinct is to relinquish all previous association with "studying." We breathe a sigh of relief as we look back at the hours of studying, hoping they were adequate to support us in the years ahead.

For the IQT students, this hope is short lived when they hear an evaluator say, "This is just the start. Crew duty will be what you make of it and the best way of making it a rewarding experience is to hit the books and do a lot of self-study." Therefore, this article is especially relevant to the crew member, the instructor, and the evaluator. Its purpose is not to dwell on the importance or history of self-study but to identify methods unique in their approach to better learning the weapon system and building upon the foundation established at IQT.

Three methods will be discussed. They are not exclusive of one another and each has its strengths and weaknesses. In fact, they probably work best when used together. We've called them Broad Brush, Subsystem, and Games.

The goal of the Broad Brush approach, especially valuable to the new crew member, is to learn where information is located so that it's immediately available. It familiarizes crew members with the contents of the operations manual and publications set they are going to use but is not a process of memorization or indepth study. Begin the process by establishing a minimum schedule of one hour of self-study during each alert, dedicated to a particular topic or regulation. This, of course, is exclusive of unit required self-study such as EWO, Code Handling, etc. In a two month period, all the material in the launch control center's publications set can be reviewed.

The key ingredient in this method is "skimming the material," i.e., avoiding the intricate detail and looking for "the big picture." What are the major topics covered in a particular regulation? Where is the information located? How is it organized? When you've completed the review cycle, start over but concentrate on recent

ntaining a Standard of Excellence

changes to the regulations or technical orders. The weapon system and everything associated with it is constantly changing. If you don't keep up with the changes, your knowledge will be outdated and so will you.

The counterpoint to the Broad Brush method is the Subsystem approach. The goal of this more detailed method is to learn as much as possible about a portion of the weapon system or a particular regulation. Studying a topic in depth and in isolation is especially effective when directed towards a personally difficult topic. Suppose you have a poor understanding of power distribution in the launch control center. How do you resolve this lack of knowledge?

Your first step is to read everything in sections one and two of the operations manual about power distribution. As you look at the figures in the operations manual, organize the information and ask yourself questions such as: What pieces of equipment derive their power from a particular power source? If this circuit breaker is open, what capabilities will be lost? Can this circuit breaker be isolated? Document those questions you can't answer and ask an instructor or evaluator for the answer and/or reference. When you receive an answer, check the reference to help remind you where the information is located, to reinforce it in your own mind, and to ensure the answer was correct and understandable.

Now that you've laid the groundwork for this method, research other technical orders, regulations, and SAC civil engineering manuals for more detailed information, and repeat the question and answer process when needed. As you examine these publications, tie them in with the operations manual and review the procedure(s) that affect the subsystem. This is the time for an indepth step-by-step procedural study with particular emphasis on warnings, cautions, notes, lead-ins, and amplifications. The purpose here is not to memorize the order of the steps or how to do it, but rather to ensure you understand them. Ask yourself: What does this note mean? When would I meet the criteria for this lead-in? What indications will I receive when I accomplish this step? What capabilities will I gain or lose when I open this circuit breaker? As you can see, this method is time consuming and specifically tailored for detailed study of a fairly narrow topic.

The last technique will appeal to those who enjoy the excitement of competition especially in the area of trivia. We've called it the Games approach. Its multitude of variations are aimed at sharpening your technical knowledge. One variation is "Weapon System Question of the Day." In this game, crew members find a question they believe will stump their crew partner(s). After completing changeover, they exchange questions and have 24 hours to find the answer; a reference must be given with the answer. If all crew members are able to answer the question, the contest is a draw. If a crew member stumps his/her partner(s) she/he gets one point. The person with the most points at the end of the week (month or quarter) wins. The formats of Twenty Questions and Hangman also work well, and we've heard rumors that crew members have designed cards to use with the Trivial Pursuit board. The Game method can certainly generate some interesting discussions (What do you mean cork insulation is not used to protect the first stage motor!) and since each crew member will likely direct questions in his/her partner's weak areas, a lot of meaningful research can take place.

As you've progressed through this article, you may have noticed that there are three principles common to each of the self-study techniques. Without adhering to them, your self-study time may not be as effective as it should be. The first principle is, ask questions. There's a saying that goes, "The only stupid question is the one that isn't asked." A crew member should never be afraid or embarrassed to ask an instructor, evaluator, or crew partner a question. It's also wise to ask questions when there's time for research rather than at 0300 hours when you're faced with waking your crew partner and deciding whether or not to shut down the launch control center in less than a minute.

The second principle is to always get references with the answers. Additionally, you should look up the reference and ensure the answer was correct and that you can find it in the future. This will help you master the organization of the tech orders and regulations and reinforce the information you just learned.

The last and most important principle is to make self-study a continuing process. Our world continually changes—systems are modified, regulations are changed, and philosophies and policies are updated. To be effective in your areas of responsibility, you must continue to study so that you do not stagnate.

Job knowledge—it's important to you professionally and personally; it's vital to the safety and security of the nation; and it should be an integral part of every combat crew. Regardless of the method, **self-study is one key to success—individually and corporately.**

WEAPONS SAFETY

Look Out Below!

During work on a Minuteman LF, an unsecured workcage was knocked off the "diving board." It fell down the launch tube and struck the missile, damaging the raceway and the 1-2 interstage. Depot repair will be required.

The Shot Heard Round The . . .

A shooter was firing his M-16 in the semi-automatic mode when a 5.56 mm round exploded. The magazine and bolt catch latch were blown off, and the lower receiver was seriously damaged. Fortunately, the member was not injured.

SAFETY CROSS FEED

FLYING SAFETY

Not My Job

A KC-135 flight crew noticed the pressure release "T" handle was loose but flush with its receptacle during preflight. Since it was not part of their preflight checklist, they did not call for maintenance assistance. Shortly after rotation the cabin pressure release door departed the aircraft and was damaged beyond repair.

A Thankless Task

A B-52 instructor radar navigator suffered the bends during unpressurized flight at FL 240. Why only him? Because he was actually moving about the aircraft performing inflight maintenance.

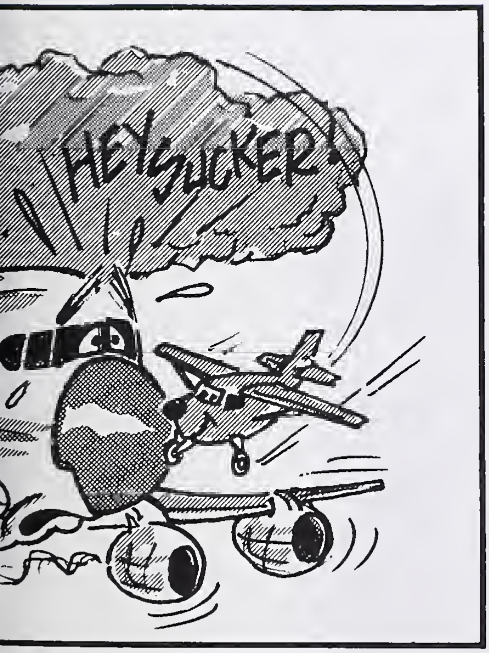
See . . . And Avoid

After checking in on tower frequency just prior to the final approach fix, a KC-135 pilot spotted a blue and white Cessna at 11 o'clock moving rapidly across his nose at approximately the same altitude and within 1000′ of the tanker. Fortunately, the tanker pilot remained wary of this stranger who was attempting to co-habit final approach airspace, because as the Cessna crossed his 12 o'clock position, it initiated a right turn into the KC-135! Quick evasive action by the KC-135 pilot prevented a midair collision. It pays to keep your head out of the cockpit!

GROUND SAFETY

Oh — That's What Toe Covers Are For

While walking backwards pulling a running power lawnmower, an NCO tripped over a curb. As he fell, he pulled the mower over his right foot. His tennis shoes were not adequate to prevent a toe from being severed by the spinning blade.



Look, No Hands . . . No Teeth

An airman riding a bicycle with "no hands" hit a chuckhole. The bicycle stopped, and he executed a flip over the handlebars, landed face first on the pavement, and dislodged three front teeth.

Too Close for Comfort

While performing the catching chores for his ball team, a SSgt decided to get an edge on base stealers. He squatted closer to the batter than recommended and was struck by the bat.

Roll Me Over

An airman working under his automobile was injured when the vehicle began rolling. His surprise was hardly understandable in view of the fact that the gear shift was in neutral, the parking brake wasn't set and chocks were not used.

In Hot Water

A worker filling a pail of water from a hose became impatient with the slow rate of flow and turned the faucet on full force. Predictably the water splashed on his hands and face where its 170° temperature took a serious toll.

Rocking the Boat

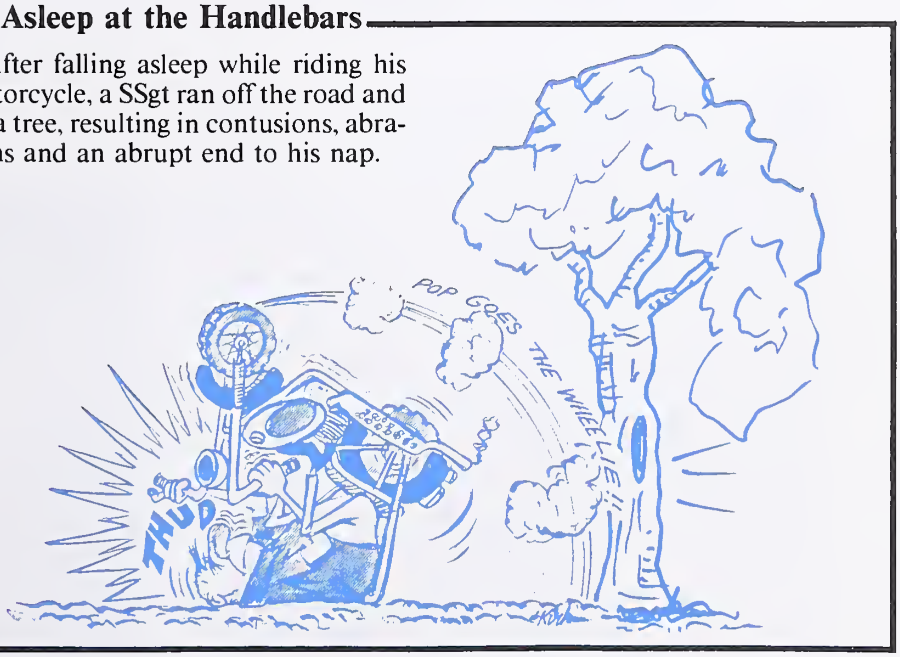
A SrA standing on the bow of his boat failed to keep an eye on surface conditions. When the boat hit a wave he fell backwards through the windshield, suffering serious lacerations.

Off We Go Into The . . .

A TSgt jumped from his AFMV in the alert parking area to stop an unsafe act. However, he left his own vehicle running and in reverse rather than park, as he had intended. The vehicle rolled backwards 50 feet and struck an alert tanker.

Asleep at the Handlebars

After falling asleep while riding his motorcycle, a SSgt ran off the road and hit a tree, resulting in contusions, abrasions and an abrupt end to his nap.



PROFESSIONAL PERFORMERS

Missile Crew

Crew E-082, consisting of 1Lt Jerry W. Merriman, MCCC; Captain Jeffrey A. Signor, DMCCC; SrA Jose M. Rosario, Jr., MSAT; and A1C Paula J. Bablo, MFT; 381 SMW, McConnell AFB, is SAC's Missile Crew of the Month.

While on strategic alert recently, Crew E-082 experienced a power loss. Normal power failed to return and automatic transfer to standby power failed to occur. The crew manually transferred the site to standby power. While performing power verification procedures, the crew found cooling water pump P-104 malfunctioning in the automatic mode. The crew isolated P-104 and brought P-103 on-line. P-103 blew a main water seal, flooding two levels of the silo equipment area. The crew isolated P-103 and placed P-104 in the hand mode of operation. After returning to the silo equipment area, the crew also found that P-104 had blown a main seal. They miraculously kept P-104 operational thus keeping the missile on strategic alert. To complicate matters, a maintenance team arrived to troubleshoot P-103/P-104. While the maintenance team was in the elevator, the elevator emergency safety brakes locked. The crew tried to lower the elevator using the emergency handcranking procedures, but the procedures were ineffective. The crew then overrode the door safety locks to allow the technicians to escape the elevator. Crew E-082's demonstration of outstanding system knowledge and rescue procedures clearly justifies their selection for this prestigious award.

Munitions Maintenance

MSgt Jeremiah J. Deabler, 97 BMW, Blytheville AFB, is SAC's Munitions Airman of the Month. As NCOIC Missile Systems Checkout, MSgt Deabler is responsible for maintaining, testing and inspecting air launched cruise missiles (ALCM), short range attack missiles (SRAM), and related support equipment valued in excess of 600 million dollars. As ALCM project NCO, he ensured all equipment and supplies were requisitioned and in place when needed to support an accelerated ALCM activation. No milestones were missed and site activation was completed in two-thirds the time allocated to previous wings.

MSgt Deabler developed an outstanding job qualification program to support ALCM maintenance requirements. His maintenance knowledge guaranteed the wings success in a wide range of areas. He formulated an extensive missile pre-storage inspection guide and initiated an extremely demanding supervisory training program. The results from the May MSET visit reflect his superb leadership and innovative ideas. His section's 100 percent supervisory evaluation pass rate and the "excellent" ALCM stockpile rating ensured an "excellent" rating for the squadron. The stockpile received the highest initial ALCM MSET score in SAC history.

Aircraft Maintenance

TSgt Robert M. Daymude, 6 SW, Eielson AFB, is SAC's Maintenance Airman of the Month. As a propulsion section shift supervisor, TSgt Daymude is responsible for dispatching all flightline support specialists, coordiating each maintenance action with job control, completing appropriate maintenance data collection documentation, performing actual maintenance, and inspecting completed maintenance actions. TSgt Daymude displays superior management abilities in fulfilling these responsibilities. During the 1984 runway closure, he was in charge of all propulsion systems personnel and maintenance while deployed TDY to Elmendorf AFB. He ensured all tools, test equipment, and supplies needed to support the deployment were assembled and deployed in a timely manner. In addition, he was responsible for all regular Air Force and Air National Guard propulsion personnel TDY from "lower 48" units in support of the Alaska Tanker Task Force. His management of all personnel and equipment was outstanding and resulted in a letter of appreciation from the Arkansas Air National Guard unit. TSgt Daymude's technical skill and expertise were further demonstrated recently when General Vessey, then Chairman of the Joint Chiefs of Staff, was delayed at Elmendorf AFB due to number two engine constant speed drive failure. With less than one hour's notice TSgt Daymude researched and procured all parts and supplies required to repair the aircraft, put together a crew, and deployed to Elmendorf. His maintenance actions returned General Vessey's aircraft to mission capable status in minimum time allowing him to continue his historic trip to the People's Republic of China.

Missile Maintenance

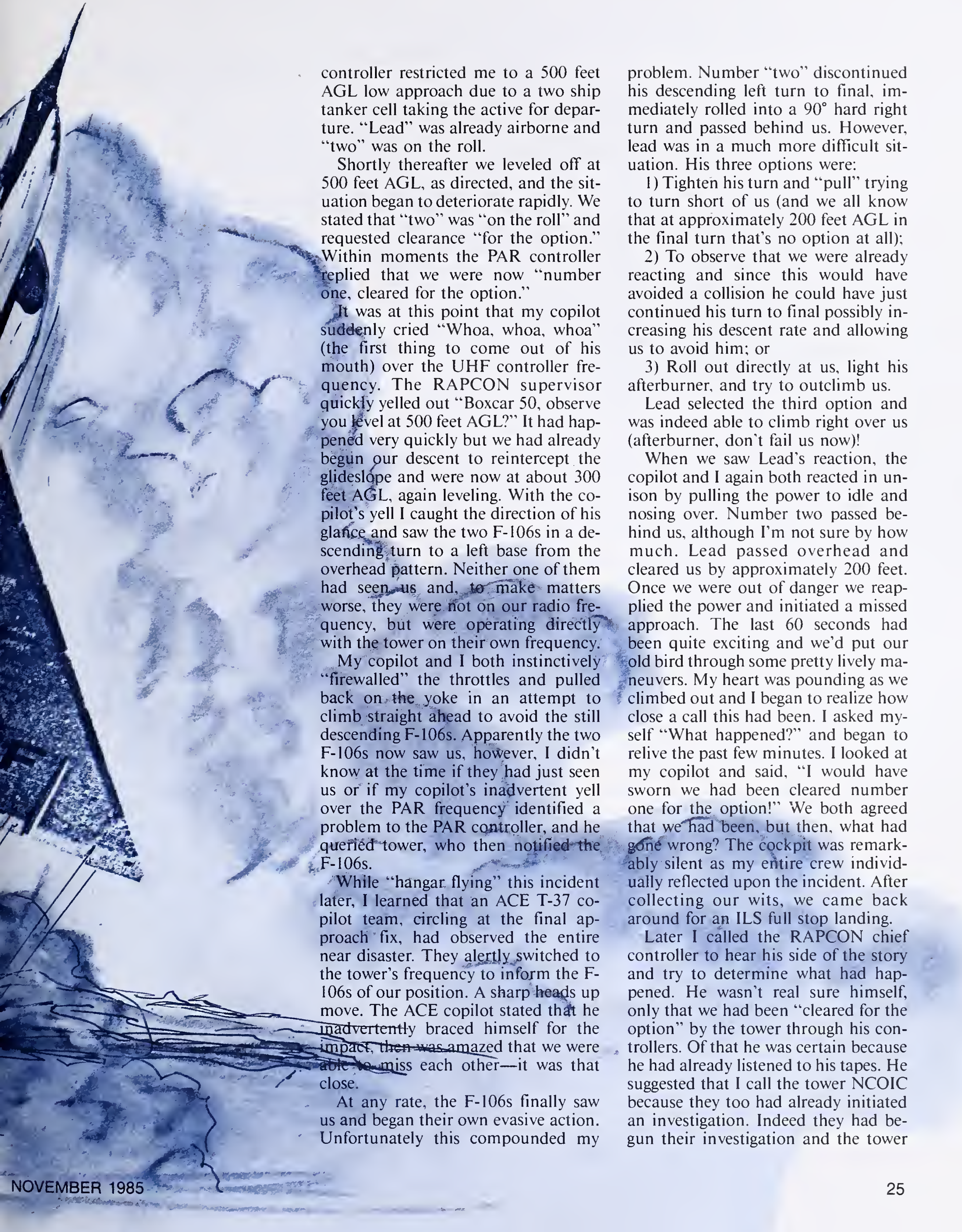
SrA Alan R. Ham, 341 SMW, Malmstrom AFB, is SAC's ICBM Maintenance Airman of the Month. Assigned to the missile mechanical branch, SrA Ham has excelled in many areas. He took prompt action to pinpoint a major malfunction of the explosive circuitry test set during checkout of the guidance and control section umbilical. His immediate response prevented a possible missile mishap. SrA Ham's technical expertise and superb preparation resulted in the SELM test manager personally selecting him to demonstrate to visiting dignitaries how the complex SELM II test equipment integrates with the existing MINUTEMAN operational system. SrA Ham has also achieved an impressive record on code handling procedure examinations. During the previous six months he scored 100 percent on each exam. His superior knowledge of these critical MINUTEMAN weapon system procedures earned SrA Ham a position on the wing codes division honor roll.

Terror in the Skies on Short Final

Maj Ben Koopmans
410 BMW, K I Sawyer AFB

Imagine yourself flying multiple approaches in a controlled radar environment. You've been in the radar pattern for almost an hour and are currently on short final flying a PAR approach. Your copilot gasps and points out traffic at ten o'clock, 1000 feet and closing! How often does this happen each year? Probably more often than any of us would care to admit. What can we as aircrew members do to reduce the number of occurrences?

Recently, I had just such a near mid air with two F-106s which were operating in the VFR overhead pattern. I was in a KC-135 on a PAR approach to a touch and go landing and had been in the instrument pattern for a little over an hour. While on approximately a two mile PAR final, the RAPCON



controller restricted me to a 500 feet AGL low approach due to a two ship tanker cell taking the active for departure. "Lead" was already airborne and "two" was on the roll.

Shortly thereafter we leveled off at 500 feet AGL, as directed, and the situation began to deteriorate rapidly. We stated that "two" was "on the roll" and requested clearance "for the option." Within moments the PAR controller replied that we were now "number one, cleared for the option."

It was at this point that my copilot suddenly cried "Whoa, whoa, whoa" (the first thing to come out of his mouth) over the UHF controller frequency. The RAPCON supervisor quickly yelled out "Boxcar 50, observe you level at 500 feet AGL?" It had happened very quickly but we had already begun our descent to reintercept the glideslope and were now at about 300 feet AGL, again leveling. With the copilot's yell I caught the direction of his glance and saw the two F-106s in a descending turn to a left base from the overhead pattern. Neither one of them had seen us and, to make matters worse, they were not on our radio frequency, but were operating directly with the tower on their own frequency.

My copilot and I both instinctively "firewalled" the throttles and pulled back on the yoke in an attempt to climb straight ahead to avoid the still descending F-106s. Apparently the two F-106s now saw us, however, I didn't know at the time if they had just seen us or if my copilot's inadvertent yell over the PAR frequency identified a problem to the PAR controller, and he queried tower, who then notified the F-106s.

While "hangar flying" this incident later, I learned that an ACE T-37 copilot team, circling at the final approach fix, had observed the entire near disaster. They alertly switched to the tower's frequency to inform the F-106s of our position. A sharp heads up move. The ACE copilot stated that he inadvertently braced himself for the impact, then was amazed that we were able to miss each other—it was that close.

At any rate, the F-106s finally saw us and began their own evasive action. Unfortunately this compounded my problem. Number "two" discontinued his descending left turn to final, immediately rolled into a 90° hard right turn and passed behind us. However, lead was in a much more difficult situation. His three options were:

1) Tighten his turn and "pull" trying to turn short of us (and we all know that at approximately 200 feet AGL in the final turn that's no option at all);

2) To observe that we were already reacting and since this would have avoided a collision he could have just continued his turn to final possibly increasing his descent rate and allowing us to avoid him; or

3) Roll out directly at us, light his afterburner, and try to outclimb us.

Lead selected the third option and was indeed able to climb right over us (afterburner, don't fail us now)!

When we saw Lead's reaction, the copilot and I again both reacted in unison by pulling the power to idle and nosing over. Number two passed behind us, although I'm not sure by how much. Lead passed overhead and cleared us by approximately 200 feet. Once we were out of danger we reapplied the power and initiated a missed approach. The last 60 seconds had been quite exciting and we'd put our old bird through some pretty lively maneuvers. My heart was pounding as we climbed out and I began to realize how close a call this had been. I asked myself "What happened?" and began to relive the past few minutes. I looked at my copilot and said, "I would have sworn we had been cleared number one for the option!" We both agreed that we had been, but then, what had gone wrong? The cockpit was remarkably silent as my entire crew individually reflected upon the incident. After collecting our wits, we came back around for an ILS full stop landing.

Later I called the RAPCON chief controller to hear his side of the story and try to determine what had happened. He wasn't real sure himself, only that we had been "cleared for the option" by the tower through his controllers. Of that he was certain because he had already listened to his tapes. He suggested that I call the tower NCOIC because they too had already initiated an investigation. Indeed they had begun their investigation and the tower

controller had already had his "ticket pulled" and was permanently decertified.

Here's what happened from the tower's point of view. Three F-106s had been in the pattern for one instrument approach and had "reported initial" for the VFR overhead pattern. They were instructed by the tower to "break" at the departure end due to the departing tanker cell. At the departure end, Lead broke out and stated that he would reenter on initial. Two and three pitched out, with two now becoming Lead. In the "break" the new lead aircraft declared "min-fuel." From the tower's point of view this was only an advisory call and did not require any priority sequencing. But in this instance the lead F-106 was insistent that he had to land.

While all this was happening on tower frequency, we in the tanker had been "cleared for the option," then restricted to a 500 feet AGL low approach, and then again "cleared for the option." All of this by the tower through the RAPCON controllers. With the lead F-106's insistence, the young tower controller evidently became intimidated and also cleared the fighter formation "number one to land." In addition to all of this, the tower controller had directed one T-37 to "break out, report initial," and had RAPCON direct another T-37 to do a 360° turn at the final approach fix. The end result of this was confusion and the near disaster I've described!

Although we now understood how the near mid air had occurred, a number of questions remained to be answered. What caused the whole mess? How could it have been prevented? First, possibly a coordinated scheduling effort might have helped to reduce the amount of traffic in the pattern at one time. But remember, in this instance we're talking about three different unit schedulers (B-52/KC-135, ACE T-37, and F-106) all getting together to try to eliminate the type of concentrated pattern activity that we were experiencing at that time. It was indeed a very crowded pattern. There were two or three tankers and bombers, two separate T-37s and then finally the F-106 formation all in the instrument pattern. Controlling all of this activity was a big job. When the F-106 insisted upon pattern priority for his min-fuel situation, and I attempted to keep my clearance for the "touch and go," the young tower controller quickly became task saturated. Another concern was the breakdown in communication between the tower, RAPCON, and the two crews concerning who had the clearance to land as each crew pressed its respective controller for that clearance. A contributing factor was Lead's insistence that he had to land ahead of us and evidently couldn't as much as extend his downwind to land behind us. A final and the most controllable factor was that the F-106 pilots did not positively clear "final" before departing the "perch." This is critical since military pilots, no matter what branch of the service, have been taught from the first day that they climbed into an aircraft, that they always, always clear with their eyes and their ears in the traffic pattern — especially prior to departing the perch.

How can you prevent a situation like this from happening to you? First, even though you are operating under a simulated instrument environment, always have someone watching outside. If possible, have a safety observer in the jump seat. This is particularly important when the pattern becomes saturated. Keep your eyes and ears constantly alert. Second, never under any circumstances initiate a turn to final without positively ensuring that final is clear. Finally, remember that the controllers in both the tower and RAPCON are only human and they can make mistakes too. Even though in many instances we are dependent upon them and other pilots to be precise and flawless, we have the ultimate responsibility, and no one else! Be forever vigilant and always remain position oriented. Cudos to the T-37 ACE team for being heads up and eyes out, possibly saving the day. Know who is out there flying with you and where they are at all times.

These suggestions should help avoid the situation, but just in case, always anticipate what you can do to avoid a mid air should you one day face **terror in the skies on short final.** Fly safe!

SAC SAFETY SCREEN

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW AFR 127-2/SS1.*

644 BMS, K I Sawyer Crew E-35: P Capt James K Arter Jr, CP 1Lt Paul E Dobracki, RN Capt Marvin C B Chan, NN 1Lt David A Fairchilds, EW 1Lt Stephen P Beecher, AG SSgt Kenneth K Miyazono

644 BMS, K I Sawyer Crew R-42: P Capt Peter B Melim, CP 1Lt James L Edmiston, RN Capt Steven D Marshall, NN Capt Richard J Hale, EW 1Lt Chester D Wilson, AG SSgt John M Ricks

924 AREFS, Castle Crew R-108: P Capt Lance Kaplan, CP Capt Paul A Nelson, N 1Lt Clifford M Rotti, BO TSgt Donald J Rundle

46 AREFS, K I Sawyer Crew S-104: P Maj Larry B Howell, CP Lt John Allen, N Lt Richard Hair, BO Sgt James D Protzmann

41 AREFS, Griffiss Crew S-101: P Maj Robert M Furbush, CP Capt Roger H Ducey, IN Capt Daniel S Yinger, IB SSgt Tina M Skrzypiec

668 BMS, Griffiss Crew R-15: AC Maj Scott L Wangen, CP 1Lt William H Stimpson, RN 1Lt Lee S Richie Jr, RN 1Lt James J Gallagher, EW 2Lt James C Blasinggame Jr, G SSgt John W Swamback

41 AREFS, Griffiss Crew E-116: P Capt Michael J Peretto, CP 1Lt Fredrick M Mosher, CP 1Lt Grant Lane, IN 1Lt Paul W Rathgeber, BO Amn David B Shead

43 AREFS, Fairchild Crew S-110: P Maj Robert D Rowen, CP Capt Gary J Carnes, N Capt Daniel S Healy Jr, BO SSgt Chris L Hatley

43 AREFS, Fairchild Crew S-120: P Maj James R Panter, CP 1Lt Thomas L Kasson, N 1Lt Rene Oyola-Martinez, BO TSgt Ivan C Cole

46 AREFS, K I Sawyer Crew E-113: P Capt Steven E Wayne, CP Lt S Lisa Ward, N Lt Ronald S Cortez, BO TSgt Martin P Kovar

23 BMS, Minot Crew R-42: AC Capt Terrance Gribben, CP 1Lt Stephen W E Vincent, RN Capt Claude A Hodges Jr, NN 1Lt Steven L Wilson, EW 1Lt William E Emerson III, AG SrA Christopher H Palmer

906 AREFS, Minot Crew R-109: AC Capt David C Heiden, CP Capt John Long, NN 1Lt Susan L Siegmund, IBO SSgt Michael W Trace

46 BMS, Grand Forks Crew E-31: P Capt Carl E Fox, CP 1Lt David G Paselk, RN Capt Robert L White, N 1Lt Brian R Daniels, EW 1Lt Todd K Olsen, G SSgt William T Worthy

905 AREFS, Grand Forks Crew E-134: FP Capt Michael A Hawkins, CP 2Lt Frederick T Hyman, NN 2Lt John E Succo, BO SSgt Robert S Bergquist

351 SMW, Whiteman Crew E-010: MCCC Capt John A Bradley, DMCCC 2Lt Paul G Murray Jr.

341 SMW, Malmstrom Crew R-153: MCCC 1Lt Kris A Johanessen, DMCCC 2Lt Roger B Sorrell

90 SMW, F E Warren Crew R-092: MCCC 1Lt Arthur B Dolinger, DMCCC 2Lt Robert S Petree

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